

## WHAT IS CLAIMED IS:

## 1. A video signal processor comprising:

a first motion detection unit for finding a difference between a luminance signal included in a predetermined composite video signal in a current frame and a luminance signal included in a composite video signal in a past frame having a predetermined time interval and outputting a first motion detection signal in accordance with the difference;

a second motion detection unit for extracting luminance signals included in a plurality of composite video signals in said current frame based on a plurality of composite video signals having a predetermined interval in a vertical direction in said current frame and a plurality of predetermined composite video signals in the vertical direction at the same position in said past frame, detecting the correlation of color signal components remaining in the extracted video signals, and outputting a second motion detection signal in accordance with the result of the detection;

a color signal difference calculating means for calculating a difference of absolute values of color signals in the current frame calculated based on said three composite video signals in said current frame and color signals in the past frame calculated based on the

composite video signals of said past frame;

a selecting means for selecting the difference of said color signals calculated by said color signal difference calculating means when either of said  
5 first motion detection signal or said second motion detection signal indicates that there is motion and selecting an intended value indicating that there is no motion when both of said first motion detection signal and said second motion detection signal indicate that  
10 there is no motion; and

a motion coefficient generating means for outputting a motion coefficient indicating motion in accordance with the value selected by said selecting means.

15 2. A video signal processor as set forth in claim 1, wherein said second motion detection unit comprises:

a first horizontal correlation detection unit for outputting a first horizontal correlation detection  
20 signal in accordance with a difference between said extracted luminance signal and a delay signal obtained by delaying the luminance signal by exactly one period's worth of said color sub-carrier wave,

a second horizontal correlation detection  
25 unit for outputting a second horizontal correlation

detection signal in accordance with an amplitude of the signal obtained by passing said extracted luminance signal through a band pass filter using the frequency of said color sub-carrier wave as the center frequency, and

5           a logical circuit for generating a horizontal correlation detection signal indicating the horizontal correlation of color signals in accordance with a logical AND of said first and second horizontal correlation detection signals.

10           3.     A video signal processor as set forth in claim 2, wherein said second motion detection unit comprises:

              a first vertical correlation detection unit for outputting a first vertical correlation detection  
15    signal in accordance with a difference between first and third luminance signals extracted from the composite video signals in which corresponding color signals have the same phase in accordance with first, second, and third luminance signals extracted from three composite  
20    video signals in the vertical direction in said current frame,

              a second vertical correlation detection unit for outputting a second vertical correlation detection signal in accordance with a difference between signals  
25    obtained from the first and the second luminance signals

corresponding to the composite video signals in which corresponding color signals have inverse phases passed through the band pass filter using the frequency of the color sub-carrier wave as the center frequency,

5                   a third vertical correlation detection unit for outputting a third vertical correlation detection signal in accordance with a difference of signals obtained from the second and third luminance signals corresponding to the composite video signals in which  
10 corresponding color signals have inverse phases passed through the band pass filter using the frequency of the color sub-carrier wave as the center frequency,

                  a logical circuit for generating a vertical correlation detection signal indicating vertical  
15 correlation of the color signals in accordance with the logical AND of said first, second, and third vertical correlation detection signals, and

                  a logical operation circuit for outputting said second motion detection signal in accordance with  
20 the logical AND of said horizontal correlation detection signal and said vertical correlation detection signal.

4.     A video signal processor comprising:

                  a first motion detection unit for finding a difference between a luminance signal included in a  
25 predetermined composite video signal in a current frame

and a luminance signal included in a composite video signal in a past frame having a predetermined time interval and outputting a first motion detection signal in accordance with the difference;

5                   a second motion detection unit for extracting luminance signals included in three composite video signals in said current frame based on three composite video signals having a predetermined interval in a vertical direction in said current frame and three  
10   predetermined composite video signals in the vertical direction at the same position in said past frame, detecting the correlation of color signal components remaining in the extracted video signals, and outputting a second motion detection signal in accordance with the  
15   result of the detection;

                  a color signal difference calculating means for calculating a difference of absolute values of color signals in the current frame calculated based on said three composite video signals in said current frame and  
20   color signals in the past frame calculated based on the composite video signals of said past frame;

                  a first selecting means for selecting the difference of said color signals calculated by said color signal difference calculating means when said first  
25   motion detection signal indicates that there is motion

and selecting an intended first value indicating that there is no motion when said first motion detection signal indicates that there is no motion;

a second selecting means for selecting an  
5 intended second value indicating that there is motion when said second motion detection signal indicates that there is motion and selecting the output signal of said first selecting means when said second motion detection signal indicates that there is no motion; and

10 a motion coefficient generating means for outputting the motion coefficient indicating motion in accordance with the value selected by said second selecting means.

5. A video signal processor as set forth in  
15 claim 4, wherein said second motion detection unit comprises:

a first horizontal correlation detection unit for outputting a first horizontal correlation detection signal in accordance with a difference between said  
20 extracted luminance signal and a delay signal obtained by delaying the luminance signal by exactly one period's worth of said color sub-carrier wave,

a second horizontal correlation detection unit for outputting a second horizontal correlation  
25 detection signal in accordance with an amplitude of the

signal obtained by passing said extracted luminance  
signal through a band pass filter using the frequency of  
said color sub-carrier wave as the center frequency, and  
a logical circuit for generating a horizontal  
5 correlation detection signal indicating the horizontal  
correlation of color signals in accordance with a logical  
AND of said first and second horizontal correlation  
detection signals.

6. A video signal processor as set forth in  
10 claim 5, wherein said second motion detection unit  
comprises:

a first vertical correlation detection unit  
for outputting a first vertical correlation detection  
signal in accordance with a difference between first and  
15 third luminance signals extracted from the composite  
video signals in which corresponding color signals have  
the same phase in accordance with first, second, and  
third luminance signals extracted from three composite  
video signals in the vertical direction in said current  
20 frame,

a second vertical correlation detection unit  
for outputting a second vertical correlation detection  
signal in accordance with a difference between signals  
obtained from the first and the second luminance signals  
25 corresponding to the composite video signals in which

corresponding color signals have inverse phases passed through the band pass filter using the frequency of the color sub-carrier wave as the center frequency,

a third vertical correlation detection unit  
5 for outputting a third vertical correlation detection signal in accordance with a difference of signals obtained from the second and third luminance signals corresponding to the composite video signals in which corresponding color signals have inverse phases passed  
10 through the band pass filter using the frequency of the color sub-carrier wave as the center frequency,

a logical circuit for generating a vertical correlation detection signal indicating vertical correlation of the color signals in accordance with the  
15 logical AND of said first, second, and third vertical correlation detection signals, and

a logical operation circuit for outputting said second motion detection signal in accordance with the logical AND of said horizontal correlation detection  
20 signal and said vertical correlation detection signal.

7. A TV receiver for judging motion of an image in accordance with a motion coefficient generated based on a composite video signal, separating a luminance signal and a color signal from said composite video  
25 signal by using a frame comb filter for a still image

having no motion, separating a luminance signal and a color signal from said composite video signal by using a band pass filter or a two-dimensional comb filter for a moving picture having motion and reproducing a video

5 signal, comprising:

a first motion detection unit for finding a difference between a luminance signal included in a predetermined composite video signal in a current frame and a luminance signal included in a composite video  
10 signal in a past frame having a predetermined time interval and outputting a first motion detection signal in accordance with the difference;

a second motion detection unit for extracting luminance signals included in three composite video  
15 signals in said current frame based on three composite video signals having a predetermined interval in a vertical direction in said current frame and three predetermined composite video signals in the vertical direction at the same position in said past frame,  
20 detecting the correlation of color signal components remaining in the extracted video signals, and outputting a second motion detection signal in accordance with the result of the detection;

a color signal difference calculating means  
25 for calculating a difference of absolute values of color

signals in the current frame calculated based on said three composite video signals in said current frame and color signals in the past frame calculated based on the composite video signals of said past frame;

5                   a selecting means for selecting the difference of said color signals calculated by said color signal difference calculating means when either of said first motion detection signal or said second motion detection signal indicates that there is motion and  
10 selecting an intended value indicating that there is no motion when both of said first motion detection signal and said second motion detection signal indicate that there is no motion; and

                  a motion coefficient generating means for  
15 outputting a motion coefficient indicating motion in accordance with the value selected by said selecting means.

8.       A TV receiver for judging motion of an image in accordance with a motion coefficient generated based  
20 on a composite video signal, separating a luminance signal and a color signal from said composite video signal by using a frame comb filter for a still image having no motion, separating a luminance signal and a color signal from said composite video signal by using a  
25 band pass filter or a two-dimension comb filter for a

moving picture having motion and reproducing the video signal, comprising:

a first motion detection unit for finding a difference between a luminance signal included in a  
5 predetermined composite video signal in a current frame and a luminance signal included in a composite video signal in a past frame having a predetermined time interval and outputting a first motion detection signal in accordance with the difference;

10 a second motion detection unit for extracting luminance signals included in a plurality of composite video signals in said current frame based on a plurality of composite video signals having a predetermined interval in a vertical direction in said current frame  
15 and a plurality of predetermined composite video signals in the vertical direction at the same position in said past frame, detecting the correlation of color signal components remaining in the extracted video signals, and outputting a second motion detection signal in accordance  
20 with the result of the detection;

a color signal difference calculating means for calculating a difference of absolute values of color signals in the current frame calculated based on said  
three composite video signals in said current frame and  
25 color signals in the past frame calculated based on the

composite video signals of said past frame;

a first selecting means for selecting the difference of said color signals calculated by said color signal difference calculating means when said first  
5 motion detection signal indicates that there is motion and selecting an intended first value indicating that there is no motion when said first motion detection signal indicates that there is no motion;

a second selecting means for selecting an  
10 intended second value indicating that there is motion when said second motion detection signal indicates that there is motion and selecting the output signal of said first selecting means when said second motion detection signal indicates that there is no motion; and

15 a motion coefficient generating means for outputting a motion coefficient indicating motion in accordance with the value selected by said second selecting means.